

Larsen and Garlinghouse, were incentivized to manage and increase the price of XRP and minimize downward pressure on the price of XRP.

#### **E. XRP vs. Stock Similarities**

53. Based on my expertise in investments, IPOs,<sup>73</sup> and financial markets, I find that Ripple used XRP in a similar manner as companies use stock. Although Ripple had publicly stated plans to develop uses for XRP beyond the ways that a company uses stock (e.g., to potentially one day serve as a bridge currency for banking transactions), Ripple ultimately primarily used XRP to fund operations and enrich its executives. Companies sell shares either through initial public offerings (“IPOs”) or seasoned equity offerings (“SEOs”) to fund operations and new investments [Ritter and Welch (2002) and DeAngelo, DeAngelo, and Stulz (2010)]. IPOs typically have lock-up provisions on these shares to limit supply and selling pressure. As previously described, Ripple took actions to lock-up XRP tokens to limit supply and selling pressure.

54. Companies also use equity or options on equity as a means to deliver substantial compensation to company executives and top managers [Murphy (2013)]. Ripple used and managed XRP in an almost identical capacity to pay Ripple executives and founders, as well as other key employees who sold significant amounts of XRP over time. Ripple employees who held XRP were incentivized to work together to increase the price of XRP and minimize downward pressure on the price of XRP in the same way that managers and executives holding company shares work to increase the share value of their company. Companies also use funding from IPOs and SEOs to fund new operations, and Ripple similarly funded the vast majority of its operations through XRP sales. Overall, in the way that XRP funded operations and incentivized executives

---

<sup>73</sup> See [REDACTED] (2007) for IPOs. Expertise in areas of investments and financial markets are outlined in many papers and teaching expertise in Appendix A.

and managers through XRP sales, Ripple used XRP in an extremely similar capacity as firms use publicly traded equity.

55. However, Ripple enjoyed the benefits of capital raising through sale of XRP, without the costs typically associated with such sales. XRP did not grant holders any formal voting rights in the governance of Ripple. Thus, Ripple executives did not have to give up any control of company operations as they normally would when selling dilutive shares with voting rights. Additionally, by not issuing publicly traded stock Ripple was not obligated to provide regular investor disclosures of financial records and corporate activities that companies typically make.

56. Another more peculiar Ripple practice not typically present with registered companies is Ripple's close relationship with market makers, wherein Ripple directed them to trade not only in such a way as to sell XRP to raise revenue, but also to buy XRP both to provide a price floor and to push the price upward. Companies may enter repurchase agreements to purchase shares in aftermarket trading, but not in a manner where they actively seek to set price floors at certain prices or push prices upward during news announcements. In other words, publicly traded companies are not allowed to use trading strategies to influence their stock price, but Ripple employed multiple market makers to manage the trading aspects in XRP. The increasing and high price of XRP over the period enabled Ripple executives to profit greatly.

Executed October 13, 2021



 Ph.D.

**X. APPENDIX A: CURRICULUM VITAE**

[REDACTED]

[REDACTED]

[REDACTED]

**ACADEMIC APPOINTMENTS**


---

Sept 2015 – Present	[REDACTED]
Sept 2012 – Aug 2015	[REDACTED]
Spring 2013	[REDACTED] at [REDACTED]
Sept 2009 – Aug 2012	[REDACTED]
July 2008 – Feb 2009	[REDACTED] at [REDACTED]
Jan 2004 – Aug 2009	[REDACTED]
Jan 2005 – May 2005	[REDACTED]
Jan 2003 – Dec 2003	[REDACTED] at [REDACTED]
May 2003 – Jul 2003	[REDACTED]
Aug 1997 – May 2003	[REDACTED]

**RESEARCH INTERESTS**


---

Cryptocurrencies, Market Manipulation, Conflicts of Interest, CDOs, MBS, Credit Ratings, International Finance, Insider Trading, Institutional and Individual Investors, Real Estate, Rational and Behavioral Pricing, Hedge Funds

**PUBLISHED OR FORTHCOMING ARTICLES**

[illegible]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

---

[REDACTED]

---



The image shows a spiral-bound notebook with a yellow cover. The notebook is open to a white page. A large, solid black rectangular redaction box covers the majority of the page content. To the left of this redacted area, there are several horizontal black bars of varying lengths, which appear to be a list or index. The spiral binding is visible on the left edge of the notebook.

London School of Economics, Texas Christian University,

The image shows a spiral-bound notebook with a yellow cover. The notebook is open to a white page. The page is filled with a grid of black and white squares, resembling a barcode or a stylized letter 'E'. The spiral binding is on the left side.

**THE HISTORY OF THE**

**WORLD**

**CHAPTER I**

**THE BEGINNING**

**THE FIRST**

**THE SECOND**

**THE THIRD**

**THE FOURTH**

**THE FIFTH**

**THE SIXTH**

**THE SEVENTH**

**THE EIGHTH**

**THE NINTH**

**THE TENTH**

**THE ELEVENTH**

**THE TWELFTH**

**THE THIRTEENTH**

**THE FOURTEENTH**

**THE FIFTEENTH**

**THE SIXTEENTH**

**THE SEVENTEENTH**

**THE EIGHTEENTH**

**THE NINETEENTH**

**THE TWENTIETH**

**THE TWENTY-FIRST**

**THE TWENTY-SECOND**

**THE TWENTY-THIRD**

**THE TWENTY-FOURTH**

**THE TWENTY-FIFTH**

**THE TWENTY-SIXTH**

**THE TWENTY-SEVENTH**

**THE TWENTY-EIGHTH**

**THE TWENTY-NINTH**

**THE THIRTIETH**

**THE THIRTY-FIRST**

**THE THIRTY-SECOND**

**THE THIRTY-THIRD**

**THE THIRTY-FOURTH**

**THE THIRTY-FIFTH**

**THE THIRTY-SIXTH**

**THE THIRTY-SEVENTH**

**THE THIRTY-EIGHTH**

**THE THIRTY-NINTH**

**THE FORTIETH**

**THE FORTY-FIRST**

**THE FORTY-SECOND**

**THE FORTY-THIRD**

**THE FORTY-FOURTH**

**THE FORTY-FIFTH**

**THE FORTY-SIXTH**

**THE FORTY-SEVENTH**

**THE FORTY-EIGHTH**

**THE FORTY-NINTH**

**THE FIFTIETH**

**THE FIFTY-FIRST**

**THE FIFTY-SECOND**

**THE FIFTY-THIRD**

**THE FIFTY-FOURTH**

**THE FIFTY-FIFTH**

**THE FIFTY-SIXTH**

**THE FIFTY-SEVENTH**

**THE FIFTY-EIGHTH**

**THE FIFTY-NINTH**

**THE SIXTIETH**

**THE SIXTY-FIRST**

**THE SIXTY-SECOND**

**THE SIXTY-THIRD**

**THE SIXTY-FOURTH**

**THE SIXTY-FIFTH**

**THE SIXTY-SIXTH**

**THE SIXTY-SEVENTH**

**THE SIXTY-EIGHTH**

**THE SIXTY-NINTH**

**THE SEVENTIETH**

**THE SEVENTY-FIRST**

**THE SEVENTY-SECOND**

**THE SEVENTY-THIRD**

**THE SEVENTY-FOURTH**

**THE SEVENTY-FIFTH**

**THE SEVENTY-SIXTH**

**THE SEVENTY-SEVENTH**

**THE SEVENTY-EIGHTH**

**THE SEVENTY-NINTH**

**THE EIGHTIETH**

**THE EIGHTY-FIRST**

**THE EIGHTY-SECOND**

**THE EIGHTY-THIRD**

**THE EIGHTY-FOURTH**

**THE EIGHTY-FIFTH**

**THE EIGHTY-SIXTH**

**THE EIGHTY-SEVENTH**

**THE EIGHTY-EIGHTH**

**THE EIGHTY-NINTH**

**THE NINETYETH**

**THE NINETY-FIRST**

**THE NINETY-SECOND**

**THE NINETY-THIRD**

**THE NINETY-FOURTH**

**THE NINETY-FIFTH**

**THE NINETY-SIXTH**

**THE NINETY-SEVENTH**

**THE NINETY-EIGHTH**

**THE NINETY-NINTH**

**THE HUNDRETH**

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

**XI. APPENDIX B: RECENT TESTIMONY AND COURT-FILED EXPERT REPORTS**

**Testimony in the last four years and court-filed expert reports**

**Case Name:** [REDACTED]

**Case No.:** [REDACTED] United States District Court, Eastern District of  
Arkansas, Central Division)

**Date:** [REDACTED]

**Case Name:** [REDACTED]

**Case No.:** [REDACTED] (United States District Court, Western District of  
Louisiana, Shreveport Division)

**Date:** [REDACTED]

**XII. APPENDIX C: LIST OF DOCUMENTS RELIED UPON**

2015 [REDACTED] Larsen agreement, LARSEN-SEC-LIT-00004869-70.

2016-06-09 [REDACTED] summary of XRP purchase, RPLI\_SEC 0000626-631.

2016-06-23 [REDACTED] summary of XRP purchase, RPLI\_SEC 0000636-641.

2017 [REDACTED] Garlinghouse Liquidity Extraction agreement, [REDACTED] 00000673-80.

2017-02-14 [REDACTED] MM and programmatic market activity agreement,  
RPLI\_SEC 0899145-151.

2017-05-25 [REDACTED] Programmatic Market Activity Agreement, [REDACTED] 00017429.

2017.06.11 CL BG chat, GARL\_Civil\_000877-78.

2018-02-22 [REDACTED] Purchase agreement, RPLI\_SEC 0233130-148.

2018-03-02 [REDACTED] amended programmatic market maker agreement, [REDACTED] 00018580.

2019-05-24 [REDACTED] Incentive agreement, RPLI\_SEC 0298094-102.

2019-09-05 [REDACTED] Xrapid master agreement, [REDACTED] 0000098.

2020 and 2019 Audited Financial Statements OCR, RPLI\_SEC 0920429-475.

XRP Ledger Foundation. (Accessed on September 29, 2021).  
<https://xrpl.org/accounts.html#creating-accounts>.

Announcing Ripple's Global Payments Steering Group. (2016, September 23). Ripple Insights.  
<https://ripple.com/insights/announcing-ripples-global-payments-steering-group>.

Asheesh Birla deposition at 55, June 23, 2021.

Browne, Ryan. Ripple, which uses cryptocurrency for cross-border payments, is now valued at \$10 billion. (Accessed October 4, 2021). CNBC. <https://www.cnbc.com/2019/12/20/ripple-creator-of-xrp-cryptocurrency-is-now-valued-at-10-billion.html>

Built for Bitcoin. (Accessed on September 29, 2021). NYDIG. <https://nydig.com>.

Casey, Michael J. and Chernova, Yuliya. Digital-Payments Company Ripple Labs Is Finalizing a \$30 Million Funding Round. (Accessed October 4, 2021). The Wall Street Journal.  
<https://www.wsj.com/articles/BL-DGB-40105>.

Chordia, T., Roll, R., and Subrahmanyam, A. (2002). Order imbalance, liquidity, and market returns. *Journal of Financial Economics*, 2002, vol. 65, issue 1, 111-130.

Chordia, Tarun and Subrahmanyam, Avanidhar (2004). Order Imbalance and individual stock returns: Theory and evidence. *Journal of Financial Economics*, 2004, vol. 72, issue 3, 485-518.

Coil. Ripple's Xpring Makes 1 Billion XRP Grant to Drive XRP Adoption and Advance Coil's Monetized Platform for Creators. (Accessed on October 2, 2021). PR Newswire.  
<https://www.prnewswire.com/news-releases/ripples-xpring-makes-1-billion-xrp-grant-to-drive-xrp-adoption-and-advance-coils-monetized-platform-for-creators-300902194.html>

Consolidated Financial Statements-as of December 31, 2019, RPLI\_SEC 0301113-1160.

[REDACTED]

David Schwartz Deposition Exhibit 84, RPLI\_SEC 0576405.

DeAngelo, H., DeAngelo, L., and Stulz, R. (2010). Seasoned equity offerings, market timing, and the corporate lifecycle. *Journal of Financial Economics*, 2010, vol. 95, issue 3, 275-295.

Deposition of Patrick Griffin at 75-76, June 29, 2021.

Email from Brad Garlinghouse, April 10, 2016, RPLI\_SEC 0205601.

Email from Brad Garlinghouse, April 10, 2016, RPLI\_SEC 0307781.

Email from Bret Allenbach, April 10, 2016, RPLI\_SEC 0205602.

Email from [REDACTED] [REDACTED] June 1, 2016, GSR00004438.

Email from Chris Larsen, April 10, 2016, RPLI\_SEC 0307781.

Email from [REDACTED], April 11, 2016, GSR00011984.

Email from [REDACTED], April 28, 2016, GSR00012857.

Email from Patrick Griffin, September 14, 2016, GSR00020001.

Email from Patrick Griffin, November 1, 2016, GSR00005000.

Email from [REDACTED], April 10, 2016, RPLI\_SEC 0205600.

Excel Export - 2014-2016 - 2t - Liquidity extraction report, RPLI\_SEC 0679467-467.

Excel\_Export\_2017\_OLD\_2h\_Liquidity\_extraction\_report, GSR00000101.

Excel\_Export\_2018\_2h\_Ripple\_Liquidity\_Extraction\_Report, GSR00000102

Excel\_Export\_2019\_2h\_Ripple\_Liquidity\_Extraction\_Report, GSR00000103



Exhibit CG-34, GSR0000104.

Field, Laura Casares and Hanka, Gordon (2001). The expiration of IPO share lockups. *The Journal of Finance* 56, no. 2, 471-500.

Garlinghouse Subpoena Response Spreadsheet, "Request 4" Tab, GARL00000001-1.

Garlinghouse XRP Award Addresses, GARL00000002-9.

Get Account Activations. (Accessed on September 29, 2021). XRPSCAN API.  
<https://api.xrpscan.com/api/v1/account/{address}/activations>.

Get Account Exchanges. (Accessed on September 29, 2021). Ripple Data API v2.  
<https://data.ripple.com/v2/accounts/{address}/exchanges>.

Get Exchanges. (Accessed on September 29, 2021). Ripple Data API v2.  
[https://data.ripple.com/v2/exchanges/{base\\_currency}+{base\\_issuer}/  
{counter\\_currency}+{counter\\_issuer}](https://data.ripple.com/v2/exchanges/{base_currency}+{base_issuer}/{counter_currency}+{counter_issuer}).

Get Transaction. (Accessed on September 29, 2021). Ripple Data API v2.  
[https://data.ripple.com/v2/transactions/{transaction\\_hash}](https://data.ripple.com/v2/transactions/{transaction_hash}).

[REDACTED]

GSR00000348.

GSR00000467A.

GSR00006693.

GSR00007297.

GSR Loan and Purchase Agreement\_Chris Larsen Trust, GSR00008433-442.

History. (Accessed on September 29, 2021). XRP Ledger Foundation.  
<https://xrpl.org/history.html>.

Joint Submission by the Parties to Hon. Analisa Torres. February 15, 2021, Dkt. No. 45.

Larsen, Chris [@chrislarsensf]. (2020, September 22). *As some of you may have noticed, I moved an \$XRP wallet to NYDIG. I've known the founders for a while, and am impressed by their security and top notch institutional standards -- this is truly custody 2.0. Check them out at nydig.com* [Tweet]. Twitter.  
<https://twitter.com/chrislarsensf/status/1308459310574264325>.

List of Chris Larsen Addresses, LARSEN\_NAT 00000102.

Mishel, Lawrence and Wolfe, Julia. CEO compensation has grown 940% since 1978. (2019, August 14). Economic Policy Institute.  
<https://www.epi.org/publication/ceo-compensation-2018>.

Murphy, Kevin J. Executive compensation: Where we are, and how we got there. In Handbook of the Economics of Finance, vol. 2, pp. 211-356. Elsevier, 2013.

Our Team. (Accessed on September 29, 2021). GSR. <https://www.gsr.io/our-team>.

Polo\_gsr\_trades, [REDACTED]\_00001699.

Q4 2020 XRP Markets Report, <https://ripple.com/insights/q4-2020-xrp-markets-report>.

Q1 2017 XRP Markets Report, <https://ripple.com/insights/q1-2017-xrp-markets-report>.

Q2 2017 XRP Markets Report, <https://ripple.com/insights/q2-2017-xrp-markets-report>.

Q3 2017 XRP Markets Report, <https://ripple.com/insights/q3-2017-xrp-markets-report>.

Q4 2017 XRP Markets Report, <https://ripple.com/insights/q4-2017-xrp-markets-report>.

Ritter, Jay R. and Welch, Ivo (2002). A Review of IPO Activity, Pricing and Allocations. Yale ICF Working Paper No. 02-01 (February 2002). Available at SSRN:  
<http://dx.doi.org/10.2139/ssrn.296393>.

Ripple Adds Several New Banks to Global Network. (2016, September 15). Ripple Press.  
[https://ripple.com/ripple\\_press/ripple-adds-several-new-banks-global-network](https://ripple.com/ripple_press/ripple-adds-several-new-banks-global-network).

Ripple Financial Services, July 2013, RPLI\_SEC 0088287.

Ripple – Funding, Financials, Valuation & Investors. (Accessed on September 29, 2021).  
Crunchbase. [https://www.crunchbase.com/organization/ripple-labs/company\\_financials](https://www.crunchbase.com/organization/ripple-labs/company_financials).

Ripple Labs, Inc. Consolidated Financial Statements As of December 31, 2014 At 16,  
RPLI\_SEC 0090955.

Ripple Raises \$55 Million in Series B Funding. (2016, September 15). Ripple Press.  
[https://ripple.com/ripple\\_press/ripple-raises-55-million-series-b-funding](https://ripple.com/ripple_press/ripple-raises-55-million-series-b-funding).

Roberts, Jeff John. Genesis expands crypto footprint with custody acquisition. (2020, May 21).  
Fortune. <https://fortune.com/2020/05/21/genesis-cryptocurrency-volt-bitcoin>.

Ripple - 2015 FS, RPLI\_SEC 0426161-187.

Ripple Financial Statements 2013 and 2014 - with notes, RPLI\_SEC 0090938-962.

Ripple Financial Statements 2016 and 2017 OCR, NY-9875\_T\_00017816-854.

Ripple Financial Statements 2017 and 2018 OCR, RPLI\_SEC 0267872-911.

Wind, Wietse. WietseWind/fetch-xrpl-transactions. (Accessed on September 29, 2021). GitHub repository. <https://github.com/WietseWind/fetch-xrpl-transactions>.

XRP. (Accessed on September 29, 2021). XRP Ledger Foundation. <https://xrpl.org/xrp-overview.html>.

XRP Explorer. (Accessed on September 29, 2021). Bithomp. <https://bithomp.com/explorer/rDCgaaSBAWYfsxUYhCk1n26Na7x8PQGmkq>.

XRP Explorer. (Accessed on September 29, 2021). Bithomp. <https://bithomp.com/explorer/rGFuMiw48HdbnrUbKRYuitXTmfrDBNTCnX>.

XRP II Master Agreement – [REDACTED] 11.29.2014, RPLI\_SEC 0259585-593.

XRP price today, XRP to USD live, marketcap and chart. (Accessed on October 4, 2021). CoinMarketCap. <https://coinmarketcap.com/currencies/xrp>.

XRP Programmatic Sales Reporting FY14 to Date v2, RPLI\_SEC 74559.

Any other documents or materials identified in my report, including data obtained from CoinMarketCap and CryptoTick.

### **XIII. APPENDIX D: IDENTIFICATION OF GSR ADDRESSES**

#### *Summary of Sources*

57. The data are sourced from the 2014-2016 GSR liquidity extraction report<sup>74</sup> (“extraction report”), detailing GSR’s activities with respect to Client “Ripple Labs” and Bot “2t”, as well as publicly available blockchain data.<sup>75</sup>

#### *Context: The Liquidity Extraction Report*

58. The “Daily Summary” tab of the extraction report describes daily trading activities of GSR on behalf of Ripple via Bot 2t. The “Comments” column (column S) reports, among other events, payouts to Ripple and commission fees received by GSR. Many cells in the “Comments” column contain transaction hashes on the XRP Ledger, which is inferred to correspond with the aforementioned payouts and commission fees based on other context given in the “Comments” cells and the balance changes of USD and EUR documented in columns Q and R. It is also inferred that “TPWR” as used in the “Comments” column refers to an address (or set of addresses) controlled by Ripple that receives the aforementioned payouts, and “GSR” as used in the “Comments” column refers to an address (or set of addresses) controlled by GSR that receives the aforementioned commission fees.

59. In the “Details” tab of the extraction report, sums of XRP amounts are given daily and correspond with the amount of “Total XRP” owned by GSR for the corresponding date in the

---

<sup>74</sup> Excel Export - 2014-2016 - 2t - Liquidity extraction report (Bates RPLI\_SEC 0679467-467).

<sup>75</sup> This report used XRP blockchain data from two sources: i) an application programming interface (API) provided by Ripple (Ripple Data API v2), available at [https://data.ripple.com/v2/transactions/{transaction\\_hash}](https://data.ripple.com/v2/transactions/{transaction_hash}), [https://data.ripple.com/v2/exchanges/{base\\_currency}+{base\\_issuer}/{counter\\_currency}+{counter\\_issuer}](https://data.ripple.com/v2/exchanges/{base_currency}+{base_issuer}/{counter_currency}+{counter_issuer}) and <https://data.ripple.com/v2/accounts/{address}/exchanges>; and ii) the full history of the XRP Ledger for use in Google’s BigQuery data warehouse, available at <https://github.com/WietseWind/fetch-xrpl-transactions>. The latter source is provided by Wietse Wind, founder of XRPL Labs (<https://wietse.com/bio>).

“Daily Summary” tab;<sup>76</sup> it is inferred that addresses listed in column A of the “Details” tab are GSR-controlled. In particular, it is inferred that [REDACTED]<sup>77</sup> is a GSR-controlled address.

60. Descendants of a certain address ‘N’ are defined to be any address ‘M’ such that ‘N’ activated ‘M’, where activation is meant in the conventional sense that ‘M’ first received XRP from ‘N’.<sup>78</sup> A genealogy of address ‘N’ is the recursively-generated tree with root ‘N’ and branches given by the descendants of ‘N’, the descendants of the descendants of ‘N’, and so on. A depth-first search is performed using XRPScan’s API<sup>79</sup> to construct the genealogy of [REDACTED]. This genealogy tree has depth four, i.e., there are at most four edges between the root and any leaf.

#### *Identification of GSR Addresses Used in Figures 1-4*

61. The term “GSR” as used in Figures 1-4 refers to a set of addresses whose identification is explained in this section. Every string in the “Comments” column in the “Daily Summary” tab of the extraction report with more than 60 characters was extracted and, after removing punctuation and whitespace characters, verified to be a valid transaction hash on the XRP Ledger, with one exception.<sup>80</sup> For each such transaction hash, the date of the transaction was retrieved as well as the associated sending address from the aforementioned BigQuery tables. The resulting set of sending addresses (“candidate wallets”) was analyzed to determine the number of transactions, out of those listed in the “Comments” column, each candidate wallet initiated, as well as the dates of the first and last instances of such transactions. The results can be seen in Table 4.

<sup>76</sup> For example, the amount in cell F43, “Details” tab, corresponding to December 1, 2014, matches the amount in cell G3, “Daily Summary” tab, also corresponding to December 1, 2014.

<sup>77</sup> [REDACTED] is an abbreviation for XRP address rPy[REDACTED].

<sup>78</sup> <https://xrpl.org/accounts.html#creating-accounts>.

<sup>79</sup> <https://api.xrpscan.com/api/v1/account/{address}/activations>.

<sup>80</sup> The exception occurs in cell S705, “Daily Summary” tab, with the string “<https://blockchain.info/tx/e5b6ba00fe8c1754bd0e36eecbad5456473eaf61965737d8c0c7b16a55cef2dc>”, corresponding to a transaction made by GSR on the Bitcoin blockchain regarding a purchase of BTC.



**Table 4 – Activity of Candidate Wallets.**

This table provides the summary of the activity of the candidate wallets as discussed in Appendix D. The 195 transaction hashes identified in the “Comments” column of the extraction report were attributed to the candidate wallet that initiated the transaction, and the set of such transactions for each candidate wallet is described.

Address	Number of Transactions	Date of First Transaction	Date of Last Transaction
[REDACTED]	2	November 1, 2016	December 2, 2016
	6	February 15, 2016	November 1, 2016
	3	March 11, 2015	March 11, 2015
	1	March 20, 2015	March 20, 2015
	14	September 10, 2015	November 5, 2015
	20	January 14, 2015	August 21, 2015
	1	March 17, 2015	March 17, 2015
	117	August 21, 2015	January 21, 2017
	1	March 29, 2016	March 29, 2016
	1	August 18, 2016	August 18, 2016
	1	September 28, 2016	September 28, 2016
	23	February 24, 2015	March 19, 2015
	5	March 11, 2015	March 11, 2015

62. The only candidate wallets that made transactions in 2016 are [REDACTED]

[REDACTED] The former two, [REDACTED] and [REDACTED], are owned by Poloniex and Bitstamp respectively,<sup>94</sup> and their presence in the candidate wallet set is a result of GSR buying or selling XRP through the respective off-chain digital asset platform.<sup>95</sup> The fourth address, [REDACTED] is used by GSR to collect commission fees and corresponds with “GSR” as used in the “Comments” column

81 [REDACTED]  
 82 [REDACTED]  
 83 [REDACTED]  
 84 [REDACTED]  
 85 [REDACTED]  
 86 [REDACTED]  
 87 [REDACTED]  
 88 [REDACTED]  
 89 [REDACTED]  
 90 [REDACTED]  
 91 [REDACTED]  
 92 [REDACTED]  
 93 [REDACTED]

<sup>94</sup> Identities sourced from <https://bithomp.com/explorer/rDCgaaSBAWYfsxUYhCk1n26Na7x8PQGmkq> and <https://bithomp.com/explorer/rGFuMiw48HdbnrUbKRYuitXTmfrDBNTCnX>.

<sup>95</sup> For example, line 3, cell S705, “Daily Summary” tab.

of the “Daily Summary” tab of the extraction report. The fifth address, [REDACTED], is unidentified, but it can reasonably be excluded from consideration since it was responsible for only one transaction mentioned in the “Comments” column; moreover, this single transaction corresponds to an “order from Patrick to sell... XRP for... [REDACTED].”<sup>96</sup> The sixth address, [REDACTED] is the recipient of “TPWR” payouts throughout the extraction report; the single transaction appearing in the “Comments” column for which [REDACTED] is responsible corresponds to an event where GSR “received 50k from TPWR for buying,”<sup>97</sup> which explains its presence in the candidate wallet set. The final candidate wallet of the six that made at least one transaction in 2016, [REDACTED] was responsible for by far the greatest number of transactions, as seen in Table 4. It is possible to conclude that [REDACTED] is GSR-controlled and is responsible for the aforementioned payout and commission fee transactions. Moreover, it can be inferred that, as far as the extraction report indicates, [REDACTED] is the only GSR-controlled wallet with payout responsibilities in 2016.

63. A table of transactions was constructed in which either the sending address or the receiving address is a candidate wallet; the subset of this table of successful transactions<sup>98</sup> was retrieved in which either the sending address or the receiving address is [REDACTED]. All such transactions in which the *receiving* address is [REDACTED] are of the Payment type, none of which are transfers of XRP.<sup>99</sup> Of the 109 addresses that make Payments to [REDACTED] at least once in 2016, all but four are members of the [REDACTED] genealogy, so it is inferred that these 105 addresses are GSR-controlled. The remaining four addresses that are not members of the genealogy are [REDACTED] [REDACTED]

<sup>96</sup> Cell S630, “Daily Summary” tab.

<sup>97</sup> Cell S671, “Daily Summary” tab.

<sup>98</sup> Encoded as “tesSUCCESS” on the XRP Ledger.

<sup>99</sup> This, among other factors, suggests that other addresses are exchanging XRP for non-XRP assets (e.g., USD) on the XRP Ledger on behalf of [REDACTED] which in turn uses the non-XRP assets for payouts and commission fees.

████ and █████ These were previously identified as Poloniex, Bitstamp, “TPWR,” and “GSR” (the recipient of commission fees), respectively.

64. The 105 addresses that make at least one Payment to █████ in 2016 and which are not Poloniex, Bitstamp, “TPWR,” or “GSR,” as discussed above, constitute the set of addresses termed “GSR” in Figures 1-4.



#### **XIV. APPENDIX E: METHODOLOGY FOR BLOCKCHAIN ANALYSIS AND FLOW OF XRP FROM LARSEN AND GARLINGHOUSE ADDRESSES**

##### **A. Methodology for Blockchain Tracing**

65. The blockchain tracing analysis starts with i) lists produced to the SEC that identify XRP addresses that are under Larsen's or Garlinghouse's control<sup>100</sup> and ii) publicly available XRP blockchain data which includes the full history of every transaction.<sup>101</sup> From the lists produced to the SEC, there are 28 Larsen-identified addresses and 19 Garlinghouse-identified addresses. Then, the "first-in, first-out" (FIFO) forensic accounting methodology is applied to trace the flow of XRP out of those Larsen-identified and Garlinghouse-identified addresses. The XRP from these addresses is traced until one of the following scenarios: i) XRP reaches a "GSR-associated" address,<sup>102</sup> ii) XRP reaches an "identified address" such as a digital asset exchange or other known entities on the XRP blockchain,<sup>103</sup> iii) XRP reaches a non-identified address with over 1,000 transactions (labeled as "high-activity address"),<sup>104</sup> iv) XRP is returned to one of the Larsen-

---

<sup>100</sup> List of Chris Larsen Addresses (Bates LARSEN\_NAT 00000102); Garlinghouse Subpoena Response Spreadsheet, "Request 4" Tab (Bates GARL00000001-1); Garlinghouse XRP Award Addresses (Bates GARL00000002-9).

<sup>101</sup> This report used XRP blockchain data from two sources: i) an application programming interface (API) provided by Ripple (Ripple Data API v2), available at [https://data.ripple.com/v2/transactions/{transaction\\_hash}](https://data.ripple.com/v2/transactions/{transaction_hash}) and ii) the full history of the XRP Ledger for use in Google's BigQuery data warehouse, available at <https://github.com/WietseWind/fetch-xrpl-transactions>. The latter source is provided by Wietse Wind, founder of XRPL Labs (<https://wietse.com/bio>).

<sup>102</sup> "GSR-associated" addresses were identified from liquidity extraction reports produced to the SEC (Bates RPLI\_SEC 0679467-467, GSR00000102, GSR00000103, GSR00000441, GSR00000442, GSR00000444, GSR00000446, GSR00000447, GSR00000448, GSR00000449, GSR00000452, GSR00000453, GSR00000454, GSR00000455, GSR00000460, GSR00000461, GSR00000462, GSR00000463, GSR00000464, GSR00000465, GSR00000466, GSR00000467). More details can be found in Appendix D.

<sup>103</sup> The identities of certain addresses on the XRP blockchain can be derived from publicly available sources online. These include data from XRP blockchain explorers (blockchain explorers enable users to view blockchain data from a web interface), e.g., bithomp.com which lists the identity behind certain XRP addresses, and from social media sites such as twitter.com.

<sup>104</sup> Addresses that have had over 1,000 transactions and were labelled "high-activity" because it is possible that they are digital asset platforms that have not been identified.

identified or Garlinghouse-identified addresses, v) less than 5 XRP is flowing out of an address,<sup>105</sup> or vi) XRP is transferred over 13 hops.<sup>106</sup>

66. For the purposes of this report, funds are only traced if they involve “Payment” and “AccountDelete” transactions of XRP. Payment transactions entail direct transfers of a certain asset from an address to another address. AccountDelete transactions entail a deletion of an address (its transaction history remains in the ledger history) and a transfer of all assets in that address to another address. There exist Payment transactions of other assets, such as USD, which are excluded from this analysis. Other types of transactions excluded for the purpose of this tracing analysis are other XRP balance-affecting changes on the ledger, such as: i) “offers” – buy/sell offers exchanging XRP for another asset at a given exchange rate, ii) “checks” – IOUs that can be cashed by the receiving party up to an expiration time and iii) “payment channels” – safeboxes where XRP is stored and can be retrieved by the receiving party. To exclude the above balance-affecting transactions means that this report assumed such transactions or changes did not actually occur.

## **B. Flow of XRP from Larsen and Garlinghouse Addresses**

67. This section provides a summary of the flow of XRP out of Larsen’s and Garlinghouse’s identified addresses based on i) direct transfers (1 hop only) and ii) tracing XRP over multiple hops.

---

<sup>105</sup> Tracing was not done for transactions less than 5 XRP because: i) tracing minute amounts is computationally intensive and does not impact the results significantly, so a lower bound is necessary, and ii) 5 XRP has typically been the largest fee that has been charged in the course of a transaction.

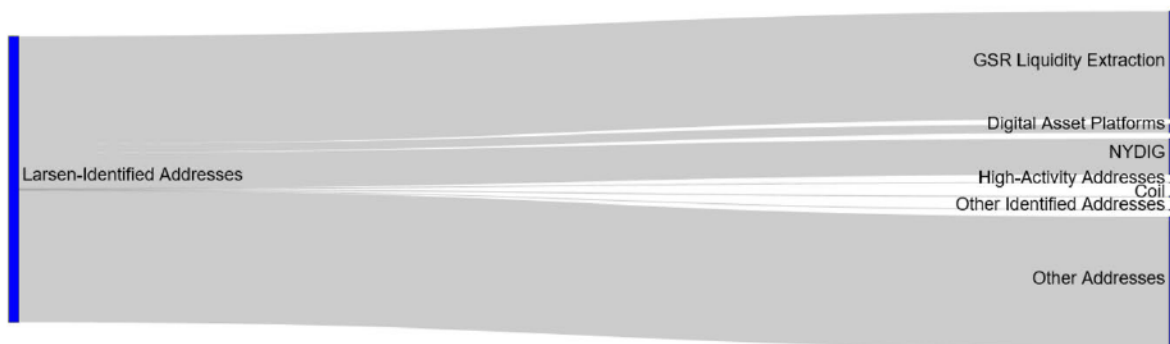
<sup>106</sup> Due to the exponential growth in the number of addresses and transactions to trace for each additional hop, the analysis stopped at 13 hops for the Larsen-identified addresses. Less than 20,000 XRP was traced that went beyond 13 hops before reaching one of the criteria above, representing less than 0.001% of the XRP flowing out of Larsen-identified addresses. XRP flowing out of Garlinghouse-identified addresses was not transferred over two hops before it hit one of the other criteria above.

68. As noted in the tracing methodology described above, the XRP flowing from the identified addresses could have been transferred to other XRP addresses up to 13 times before reaching an identified destination, such as a digital asset platform. Hence, it is possible that the ownership of the XRP changed hands between when it left one of the identified addresses and when it reached a digital asset exchange, e.g., through an over-the-counter (OTC) sale, as an exchange for a good or service, as an investment or as a donation. Indeed, this happened with some of Larsen's XRP since, as alluded to the main report, he sold XRP in OTC sales and to friends who themselves could have subsequently sold their XRP on digital asset platforms. In general, fewer transfers of a digital asset provides more confidence that the digital asset is still in the possession of the original holder. As such this Appendix provides an accounting of funds both i) directly transferred over 1 hop from the identified addresses and ii) transferred over multiple hops.

69. In general, the point of the tracing is not to pinpoint where all the funds went and exactly when they were transferred to other parties. Nevertheless, it is possible to infer that significant amounts of XRP originating from Larsen's and Garlinghouse's identified addresses were transferred and traced to GSR as well as digital asset platforms where they could have been sold. Whether or not the traced XRP was actually sold at digital asset platforms would require having detailed account data from all digital asset platforms where XRP was traced to have reached, which was not available at the time of this report's writing.

*Direct Transfers of XRP***Figure 13 – Visualization of Direct transfers from the Larsen-Identified Addresses.**

This figure illustrates the flow of funds from Larsen’s identified XRP addresses, from left to right. The thickness of each category denotes the relative size, in XRP, of funds traced. The largest recipient of funds was GSR. “Other Addresses” are addresses that were not identified.

**Table 5 – Direct Transfer Amounts from the Larsen-Identified Addresses.**

This table provides the summary of blockchain analysis of the flow of funds out of Larsen’s identified addresses via 1 hop only. The US dollar (USD) equivalent value shown is the value of the XRP at the time that it left one of the Larsen-identified addresses. Analysis is as of December 22, 2020.

Address Type	XRP Transferred (million)	USD Equivalent (million)
GSR Liquidity Extraction	1,496	495
NYDIG <sup>107</sup>	500	117
Bitstamp (Digital Asset Platform)	87	51
Coinbase (Digital Asset Platform)	27	7
Coil (Micropayments Start-up Funded by Ripple) <sup>108</sup>	17	5
Kraken (Digital Asset Platform)	9	3
Other Identified Addresses (Internet Archive & XRP Tip Bot)	0.3	0.1
Other Addresses (not Identified)	1,840	394
<b>Total</b>	<b>3,976</b>	<b>1,072</b>

Values rounded to the nearest 1 million XRP and 1 million USD, except for “Other Identified Addresses” which is rounded to the nearest hundred thousand.

<sup>107</sup> NYDIG is a technology and financial services firm providing digital asset services to institutions and private clients (<https://nydig.com/>); Larsen publicly disclosed that he moved XRP to NYDIG in September 2020 (<https://twitter.com/chrislarsensf/status/1308459310574264325>).

<sup>108</sup> <https://www.prnewswire.com/news-releases/ripples-xpring-makes-1-billion-xrp-grant-to-drive-xrp-adoption-and-advance-coils-monetized-platform-for-creators-300902194.html>.

**Figure 14 – Visualization of Direct transfers from the Garlinghouse-Identified Addresses.**

This figure illustrates the flow of XRP from Garlinghouse's identified XRP addresses. The largest flows were to GSR. Analysis is as of December 22, 2020.

**Table 6 – Direct Transfer Amounts from the Garlinghouse-Identified Addresses.**

This table provides the summary of blockchain analysis of the flow of funds out of Garlinghouse's identified addresses via 1 hop only. The US dollar (USD) equivalent value shown is the value of the XRP on the date that it left one of the Garlinghouse-identified addresses. Analysis is as of December 22, 2020.

<b>Address Type</b>	<b>XRP Transferred (million)</b>	<b>USD Equivalent (million)</b>
GSR Liquidity Extraction	167	104
Ripple	62	25
Bitstamp (Digital Asset Platform)	36	21
Bitfinex (Digital Asset Platform)	2	1
Coinbase (Digital Asset Platform)	0.3	0.1
Kraken (Digital Asset Platform)	0.2	0.1
Other Addresses (not Identified)	110	35
<b>Total</b>	<b>377</b>	<b>186</b>

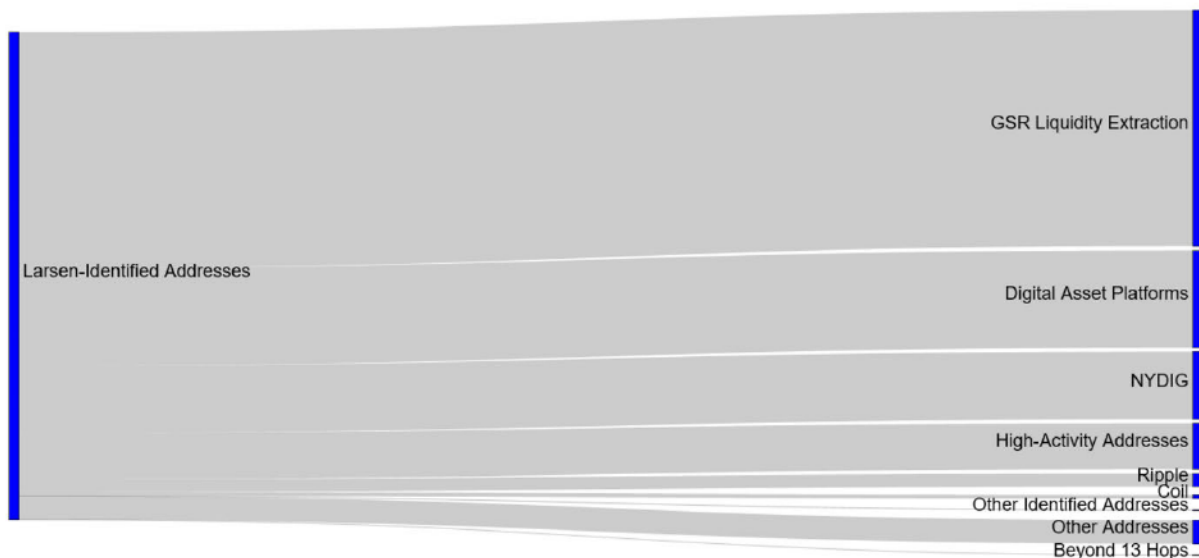
Values rounded to the nearest 1 million XRP and 1 million USD, except for Coinbase and Kraken which are rounded to the nearest hundred thousand.



### Tracing of XRP over Multiple Hops

**Figure 15 – Visualization of Flow of Funds from the Larsen-Identified Addresses.**

This figure illustrates the flow of funds from Larsen’s identified XRP addresses, from left to right. The thickness of each category denotes the relative size, in XRP, of funds traced. The largest recipient of funds was GSR, followed by digital asset platforms.



**Table 7 – Value of XRP Traced from the Larsen-Identified Addresses.**

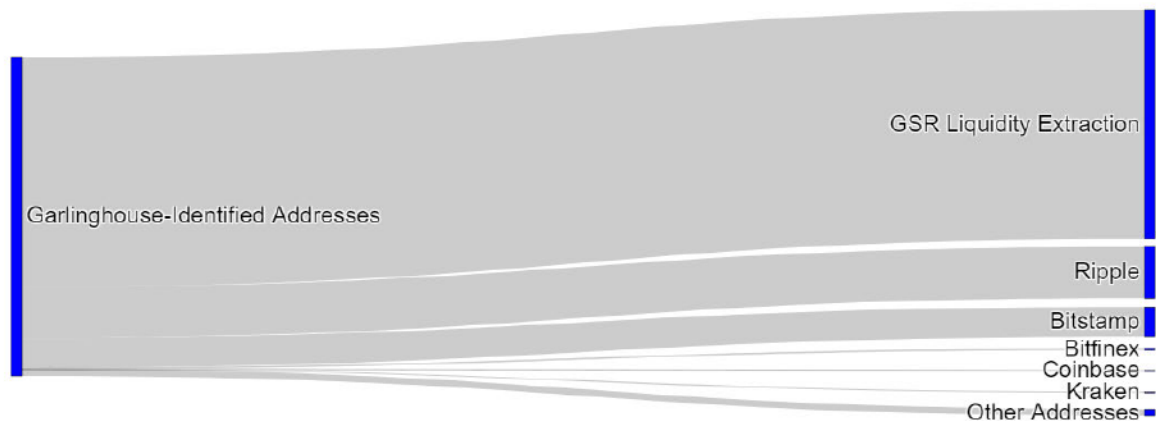
This table provides the summary of blockchain analysis of the flow of funds out of Larsen’s identified addresses. The US dollar (USD) equivalent value shown is the value of the XRP on the date that it left one of the Larsen-identified addresses. Analysis is as of December 22, 2020.

Address Type	XRP Traced (million)	USD Equivalent (million)	Weighted Average Number of Hops
GSR Liquidity Extraction	1,926	599	1.5
Digital Asset Platforms	794	244	2.8
NYDIG <sup>109</sup>	550	131	1.1
High-Activity (Addresses with > 1,000 Transactions)	377	54	3.2
Ripple	106	27	2.0
Coil (Micropayments Start-up Funded by Ripple) <sup>110</sup>	30	5	1.9
Other Identified Addresses (e.g., Internet Archive)	1.0	0.1	4.8
Other Addresses (not Identified) <sup>111</sup>	193	13	2.6
<b>Total</b>	<b>3,976</b>	<b>1,072</b>	<b>1.9</b>

Values rounded to the nearest 1 million XRP and 1 million USD, except for “Other Identified Addresses” which is rounded to the nearest hundred thousand.

**Figure 16 – Visualization of Flow of Funds from the Garlinghouse-Identified Addresses.**

This figure illustrates the flow of XRP from Garlinghouse’s identified XRP addresses. The largest flows were to GSR. Analysis is as of December 22, 2020.

**Table 8 – Value of XRP Traced from the Garlinghouse-Identified Addresses.**

This table provides the summary of blockchain analysis of the flow of funds out of Garlinghouse’s identified addresses. The US dollar (USD) equivalent value shown is the value of the XRP on the date that it left one of the Garlinghouse-identified addresses. Analysis is as of December 22, 2020.

Address Type	XRP Traced (million)	USD Equivalent (million)	Weighted Average Number of Hops
GSR Liquidity Extraction	277	139	1.4
Ripple	62	25	1.0
Bitstamp (Digital Asset Platform)	36	21	1.0
Bitfinex (Digital Asset Platform)	2	1	1.0
Coinbase (Digital Asset Platform)	0.3	0.1	1.0
Kraken (Digital Asset Platform)	0.2	0.1	1.0
Other Addresses (not Identified)	0.0001	0.0001	1.0
<b>Total</b>	<b>377</b>	<b>186</b>	<b>1.2</b>

Values rounded to the nearest 1 million XRP and 1 million USD, except for Coinbase and Kraken which are rounded to the nearest hundred thousand and “Other Addresses” which is rounded to the nearest hundred.

<sup>109</sup> NYDIG is a technology and financial services firm providing digital asset services to institutions and private clients (<https://nydig.com/>); Larsen publicly disclosed that he moved XRP to NYDIG in September 2020 (<https://twitter.com/chrislarsensf/status/1308459310574264325>).

<sup>110</sup> <https://www.prnewswire.com/news-releases/ripples-xpring-makes-1-billion-xrp-grant-to-drive-xrp-adoption-and-advance-coils-monetized-platform-for-creators-300902194.html>.

<sup>111</sup> The XRP that was traced beyond 13 hops is included in “Other Addresses (not identified)”.